

Results Are Assessed Using Quantitative Methodology

- Most technical issues of comparison are resolvable.
 - Small sample sizes can be handled using a permutation analysis procedure
 - Concerns about distribution shapes can likely be handled by appropriate levels of disaggregation.

Results Are Assessed Using Quantitative Methodology

"Staff agrees and finds that statistical analysis can help reveal the likelihood that reported differences in an ILEC's performance toward its retail customers and CLECs are due to underlying differences in behavior rather than random chance. [Louisiana Public Service Commission Final Staff Recommendation, Docket No. U-22252-Subdocket C, issued 8/21/98, p.15]

"After reviewing the comments and reply comments, the Commission is persuaded that some form of statistical methodology must be employed to determine whether the ILEC is providing performance to the CLECs either at parity with the performance it provides to itself or meets the standard adopted in lieu of parity. Further, it is important that the statistical method used reveal excessive variability within the samples as well as excessive differences between the calculated means. ... At this juncture, the Commission finds that the modified z test proposed by the Local Competition Users Group(LCUG) members is the most useful for those determinations. [Michigan Public Service Commission, Case No. U-11830, May 27, 1999]

Process Is Subject to Initial and Periodic Validation

- Initial deployment must include independent validation of implementation
- Results gathering and retention must provide for CLEC validation
- Periodic audits by CLECs must be accommodated

The quality of the decisions about performance cannot exceed the quality of the data employed in making the decision

Process Is Subject to Initial and Periodic Validation

- Initial deployment must include third party validation of implementation
 - Importance of the decision to be made requires a confirmation that the data, results and reports reflect the appropriate procedures and quality control
- Five key advance reviews/validations must occur
 - Documentation review
 - Compliance Review
 - Output Validation
 - Data Retention Validation
 - Comparison/Conclusion Validation
- ILECs should provide independent certification annually thereafter

Process Is Subject to Initial and Periodic Validation

- Results gathering and retention must provide for CLEC validation
 - Detailed results data must be retained
 - CLECs must be capable of cross-validating detailed data used by the ILEC to construct performance results with the internally generated data of the CLEC
 - Implies that data is retained at the transaction level with identification of the specific result to which the data aggregates
 - Minimizes the need for detail post-implementation audits
 - Data must be assessable in electronic form with near real-time speed.
 - Afford protection from inappropriate access
 - Allow the CLEC to view comparable ILEC results (at least mean, standard error and number of data point)
 - Data structure, relationships and meaning of all data elements must be clear
 - Data must be retained for a minimum of two years for audit and dispute resolution purposes

Process Is Subject to Initial and Periodic Validation

- Periodic audits by CLECs must be accommodated
 - Resolve discrepancies that may arise following execution of initial readiness audit
 - Auditing should be permitted at least annually without cause
 - Additional audits, with regulatory commission approval, in the event of a complaint proceeding

Process Is Subject to Initial and Periodic Validation

"Proper design of procedures for the [performance measurement] audit will be important in assuring the affected carriers that the information Ameritech Michigan has produced is accurate. Therefore, the Commission finds that Ameritech Michigan should meet with interested CLECs and the Staff to establish a consensus on clear objectives for the auditor. Further, the agreed upon objectives and resultant procedures designed by the independent auditor should be explicitly revealed in the audit report. Underlying data should be retained for a minimum of 24 months after the conclusion of the year in which the data was collected or 12 months after issuance of the audit report, whichever is later

The Commission finds that raw data should be retained in sufficient detail so that a CLEC can reasonably reconcile the data captured by the ILEC (for the CLEC) with its own internal data. Moreover the data pertaining to the ILEC's performance for itself must be retained at a level of disaggregation consistent with that reported for the CLECs and must, at a minimum, reflect the mean, the standard error for the mean, the number of data points used to compute the mean and an indication of the shape of the distribution for the mean. [Michigan Public Service Commission, Case No. U-11830, May 27, 1999]

Results Demonstrate Compliance

- The reporting system must be capable of supporting the decision making process
 - History not subject to revision
 - Results and detailed data supporting the results are available on a timely and predictable basis
 - Compliance reporting must be tailored to detailed required by decision
- Results demonstrate required performance stability and capabilities:
 - individual measurements
 - aggregated industry
 - individual CLECs

Results Demonstrate Compliance

- A Commission can tailor its reporting detail to its needs
- Minimum Considerations
 - Frequency should be monthly (although multiple months could be displayed)
 - Results of comparing aggregated industry and each individual CLEC to the relevant standard should be clear
- Exception reporting is a possibility to manage volume (provided detail is retained and available)
 - Results out of compliance
 - Count of results out of compliance

Results Demonstrate Compliance

- As a first step results demonstrate required performance capabilities for individual measurements:
 - For each measurement, ILEC must report at least 3 consecutive months of conforming (parity) performance
 - Demonstration need not be the same 3 months for all measures
- The ILEC still needs to demonstrate viability at commercial volumes where small sample sizes may limit the ability to detect discrimination promptly

Results Demonstrate Compliance

- Following individual result compliance, overall results demonstrate required performance capabilities for the industry in aggregate:
 - the ILEC may not have any more measures out of compliance (one standard deviation with 15% Type I error) in one month than would be expected, as a result of random variation, at a 95% level of confidence
 - the ILEC may not have any measure out of compliance by one standard deviation for three consecutive months (probability of random occurrence $< 0.4 \%$)
 - the ILEC may not have any measure out of compliance in any month by more than three standard deviations (probability of random occurrence $\sim 0.2 \%$)

Results Demonstrate Compliance

- Results demonstrate required performance capabilities for individual CLECs
 - More than the threshold number of measurements may fail for an individual CLEC than would be expected due to random variation.
 - At the same time, the aggregated results for the CLEC industry may not provide such an indication.
 - The Commission may need to investigate and understand the public interest considerations of such a situation.

Self-enforcing Procedures in Place

- Basic principles for “enforcement”
 - Minimized “entanglement” cost
 - Few automatic exclusions from consequences
 - Consequences have meaningful impact
 - Based upon ILEC and measurement specific experience
 - Minimal opportunities to “game” the system
 - Consequences escalate with repeated or exceptionally poor performance
 - Additional consequences may be applicable for industry-wide poor performance

Appendix A

Illustrative Documentation Detail

Measurements and Methodologies are Documented in Detail

Mean Time To Restore = $\Sigma[(\text{Date and Time of Trouble Ticket Resolution Returned to CLEC}) - (\text{Date and Time of Trouble Ticket Referred to the ILEC})] / (\text{Count of Trouble Tickets Resolved in Reporting Period})$

For CLEC Results: The restoral interval for resolution of customer requested maintenance and repair is the elapsed time, measured in hours and tenths of hours, measured from the CLEC submission of a customer trouble to the ILEC, regardless of the ultimate resolution of the trouble, to the time the ILEC returns a valid trouble resolution notification to the CLEC. The elapsed time is accumulated by service type and trouble disposition for the reporting period. The accumulated time is divided by the count of maintenance tickets reported as resolved by the ILEC (by service type and trouble type) during the report period.

For ILEC Results: Same computation as for the CLEC.

Other Clarifications and Qualification:

- Elapsed time is measured on a 24-hour-a-day, seven-days-a-week basis. The time is measured in hours and hundredths of hours rounded to the nearest hundredth hour.
- Multiple reports for the same customer service are treated as the same incident only when a subsequent report is received for a customer service arrangement that already has an open ticket.
- "Restore" means to return to the normally expected operating parameters for the service regardless of whether or not the service, at the time of trouble ticket creation, was operating in a degraded mode or was completely unusable.
- A trouble is "resolved" when the ILEC issues notice to the CLEC that the customer's service is restored to normal operating parameters.
- A trouble ticket or trouble report is any record (whether paper or electronic) used by the ILEC for the purpose of monitoring action and disposition of a service repair or maintenance situation.
- ILEC acceptance of a trouble by the call receipt agent is considered equivalent to the CLEC logging or submitting a trouble to the ILEC.
- The ILEC closure of a trouble ticket (whether automatic or manual) is considered equivalent to returning a trouble resolution notice to the CLEC.

Measurements and Methodologies are Documented in Detail

Reporting Dimensions	Excluded Situations
<ul style="list-style-type: none">• Service Type (See Appendix A)• Trouble Type• Geographic Scope	<ul style="list-style-type: none">• Trouble tickets that are canceled at the CLEC's request• ILEC trouble reports associated with administrative service• Instances where the CLEC or an ILEC customer requests that a ticket be "held open" for monitoring• Subsequent Reports (additional reports on an already open ticket)• Any trouble type tracking that parties agree are technically unfeasible or operationally prohibitive• A trouble ticket created for tracking and/or monitoring requests for clarifying information (e.g. confirmation of customer ownership from CLEC support centers.• Tickets used to track referrals of misdirected calls

Measurements and Methodologies are Documented in Detail

Data Retained Relating To CLEC Experience	Data Retained Relating To CLEC Performance
<ul style="list-style-type: none">• Report Month• CLEC Ticket #• Ticket Submission Time• Ticket Submission Date• Ticket Completion Time• Trouble Resolution Time• Trouble Resolution Date• Service Type• WTN or CKTID (a unique identifier for elements combined in a service configuration)• Trouble Type• Geographic Scope	<ul style="list-style-type: none">• Report Month• Average Restoral Interval• Standard Error for the Average Restoral Interval• Service Type• Trouble Type• Geographic Scope• Number of Tickets

Appendix B

Disaggregation Details

Sufficient Disaggregation of Results is Provided - Appropriate Dimensions of Disaggregation

Measurement Area	C L E C	S V C	A C T	V O L	G E O	Other
Pre-ordering						
Average [Query] Response Time	v		v			By interface
Provisioning						
Average Completion Interval	v	v	v	v	v	
Percentage Due Dates Missed or Percentage Completed on Time	v	v	v	v	v	
% Complete within "X" Days	v	v	v	v	v	
Average Offered Interval	v	v	v	v	v	
Average Coordinated Customer Conversion Interval	v	v	v	v	v	
% Service Loss From Early Cuts	v	v	v	v	v	
% Service Loss From Late Cuts	v	v	v	v	v	
Average Interval for Held Orders	v	v			v	By reason
% Held Orders > 90 Days	v	v			v	By reason
% Held Orders > 90 Days	v	v			v	By reason
Percentage of Troubles within "x" days for new orders	v	v			v	By reason
Order Status Measurements						
Average Reject Notice Interval	v	v	v			By interface
Average FOC Notice Interval	v	v	v			By interface
Average Jeopardy Interval	v	v	v			By interface
Percentage Orders Given Jeopardy Notices	v	v	v			By interface
Average Completion Notice Interval	v	v	v			By interface
Percent of Order Flow Through	v	v	v	v		By interface
Percent Orders Rejected	v	v	v	v		By interface
Average Submissions per Order	v	v	v	v		By interface
Repair and Maintenance						
Average Time to Restore	v	v	v		v	
Mean Jeopardy Interval for Maintenance/Trouble Handling	v	v	v		v	
Frequency of Troubles in a 30 Day Period	v	v	v		v	
% of Customer Troubles Resolved Within Estimate	v	v	v		v	

Sufficient Disaggregation of Results is Provided - Appropriate Dimensions of Disaggregation

Measurement Area	C L E C	S V C	A C T	V O L	G E O	Other
Billing						
Average Time to Provide Usage Records	v		v			By resale/une/interc
Average Time to Deliver Invoices	v		v			By resale/une/interc
Usage Accuracy	v		v			By resale/une/interc
Invoice Accuracy	v		v			By resale/une/interc
Interconnection						
% Call Completion	v				v	By trunk type
Mean Time To Notify CLEC	v					By incident
% Blocking on Interconnection (Final) Trunks	v				v	
% Blocking on Common Trunks	v				v	
Average Time to Respond to Collocation Requests	v				v	By collo type
Average Time to Provide a Collocation Arrangement	v				v	By collo type
% Due Dates Missed - Collocation	v				v	By collo type
Network Performance	v					
UNE						
Availability of Network Elements	v		v			By UNE
Performance of Network Elements	v		v			By UNE
General						
System Availability						By interface
Center Responsiveness (Speed of Answer)						By Center
Center Availability						By Center
Call Abandonment (Support Center)						By Center
OS/DA Average Time to Answer						By OS and DA
Average Time Allotted for Proofing Directory Listing Updates	v					
Percentage of Accurate Database Updates	v					By database
Percentage of Late Updates (Missed Due Dates)	v					By database

Sufficient Disaggregation of Results is Provided - Product/Service Detail

Disaggregation Detail	F C C	L C U G	A T & T	A m e r	S W B T	B S T	P B	B A - N Y	U S W
Resale POTS								v	
Residence		v	v	v	v	v	v		v
Business		v	v	v	v	v	v		v
Centrex/Centrex-like		v	v	v			v		v
ISDN					v				
ISDN BRI		v	v				v		v
ISDN PRI		v	v				v		v
PBX Trunks							v		
Analog PBX		v	v						v
DID		v	v						v
Resale Specials						v			
Subrate/DS0				v					
VGPL		v	v		v		v		
Digital DS0			v		v		v	v	v
High Cap				v					
DS1		v	v		v		v	v	v
DS3		v	v		v		v	v	v
>DS3		v	v						
Other		v							

Sufficient Disaggregation of Results is Provided -
Product/Service Detail

Disaggregation Detail	F C C	L C U G	A T & T	A m c r	S W B T	B S T	P B	B A - N Y	U S W
UNE Loops				v		v			
8db Analog		v	v		v		v		v
2 wire digital		v	v		v		v	v	v
4 wire digital		v	v		v		v	v	v
ADSL		v	v						
HDSL		v	v				v		
xDSL		v					v		
DS3					v			v	
Other		v							
UNE Switch Ports									
Inn Side									v
Analog		v	v		v		v		
BRI		v	v		v		v		
DS1		v	v						
Centrex							v		
Trunk Side									
PRI		v	v		v		v		
DID-capable		v	v		v		v		
Message		v	v						
UNE Dedicated Transport					v		v	v	v
DS0		v	v						
DS1		v	v						
DS3		v	v						
UNE Combinations									
Loop + Port + Transport		v	v		v		v	v	
DS1 loop + mux		v	v		v				

[illegible]

Sufficient Disaggregation of Results is Provided - Activity Detail

[illegible]

Sufficient Disaggregation of Results is Provided - Activity Detail

[illegible]

Sufficient Disaggregation of Results is Provided - Activity Detail

Disaggregation Detail	F C C	L C U G	A T & T	A m e r	S W B T	B S T	P B	B A - N Y	U S W
Pre-Ordering Query Types									
Due Date Reservation		v	v	v	v		v	v	
Feature Function Availability		v	v				v		
Facility Availability		v	v						
Qualification of xDSL Loops		v	v						
Street Address Validation		v	v	v	v		v	v	
Service Availability Information		v	v		v			v	
Appointment Scheduling		v	v						
Customer Service Records		v	v		v		v	v	
< 10000 characters				v					
> 10000 characters				v					
Telephone Number		v	v	v	v		v	v	
Rejected or Failed Queries		v	v				v		
Dispatch Status					v		v		
Other								v	
Maintenance Query Types									
Create Maintenance Request		v	v					v	
Obtain Status		v	v					v	
Modify Request								v	
Obtain Test Results		v	v					v	
Cancel Request		v	v					v	
Retrieve Maintenance History								v	
Rejected or Failed Queries		v	v						
Clearance Notification		v	v						
Closure Notification		v	v						

Appendix C

Performance Audit Plan